

## **Chapter 3**

### **Installation and use of CPro software**

#### **Introduction**

This chapter provides the detailed description of installation and use of the Census and Survey Processing System (CPro) Software, which is being provided with the *Census of India Housing Microdata Sample (CIHMS)* Files. This software could be used to quickly tabulate data files once the data dictionary is available. The procedure of using the CPro has been explained by taking an example of Goa Houselisting data of Census of India 2001. It is suggested that the users should read this chapter carefully before using the CIHMS files.

#### **About CPro**

The CPro is a software package for entry, editing, cross-tabulation, and dissemination of census and survey data. CPro combines the features of the Integrated Micro computer Processing System (IMPS) and the Integrated System for Survey Analysis (ISSA) in a Windows Environment.

Important features of the CPro are mentioned in this section. CPro provides tool to create, modify and run data entry, batch editing and cross tabulation application from a simple, integrated development environment. The data are stores in text files described by data dictionaries. It also provides tools to view data and text files, to view tables and thematic maps created by cross-tabulations applications, to convert IMPS and ISSA data dictionaries to CPro, and convert ERSI shape files (maps) to CPro map files.

CPro was developed jointly by the U.S. Census Bureau, Macro International and Serpro, SA with major funding from the U.S. Agency for International Development.

For detailed information, see 'Help' folder provided alongwith the data file in CD-ROM.

CPro allows persons with little or no computer experience to quickly tabulate data files once a data dictionary is available. The Data Dictionary describes the records, items, and values in the data file. In addition, users can create their own category classifications for any data item. However it should be noted that one should not changed the basic layout of the data dictionary. The details of data dictionary used for the present project may be seen at Annex-2 of Chapter 2.

Cross tabulation is a module of the CPro software, which performs the major tasks in census and survey data processing. In a CPro Cross Tabulation application, users may create up to 4-way cross-tabulations [two row variables and two column variables] with any combination of data items. For more information see 'Help' in the CPro software.

The CIHMS is a data file composed of a record of Household information based on Census of India 2001 Houselisting Operations. Each Household record is composed of basic information on household amenities with limited variables. The identifications particulars of persons in a family are not in the data file. The data file is an implicit sample selected by applying satisfied systematic sampling in each district. For details of sampling procedure adopted for selecting CIHMS, see Chapter 2. As mentioned above, the present chapter explains as how to use the CPro software to create cross tabulations using the Goa Houselisting data of Census of India 2001. It may be pointed out that the CD does not contain the Goa data and it is only been cited by way of an example. The user may like to choose any state data file to tabulate.

### **CPro Hardware and Software Requirements**

#### **A minimum configuration:**

- 33 MHz 486 processor
- 32 MB of RAM
- VGA monitor
- Mouse
- 26 MB of free hard drive
- Microsoft Windows 95

#### **A recommended configuration:**

- Pentium processor
- 256 MB of RAM
- SVGA monitor
- Mouse
- 36 MB of free hard drive space
- Microsoft Windows 95, 98, Me, 2000, NT 4.0 or XP

### **Installing CPro**

#### **You are installing from CIHMS CD-ROM:**

- From the **Start** button on the taskbar, select **Run**.
- Make sure that the CIHMS CD-ROM in your CD-ROM drive.
- Use browse option or enter directly **Q:\Crosstab\CPro24.exe**.  
[Where Q= your CD-ROM drive letter]
- Click **OK**. The setup process takes you through a series of dialog boxes that prompt you for setup information.

It is recommended that the user should accept the default options during the installation procedure.

After executing the installation, the CPro would be included in the Program Files of your disk. The user can start the CPro as follows:

Start → All Programs → CSPro2.4 → CSPro2.4

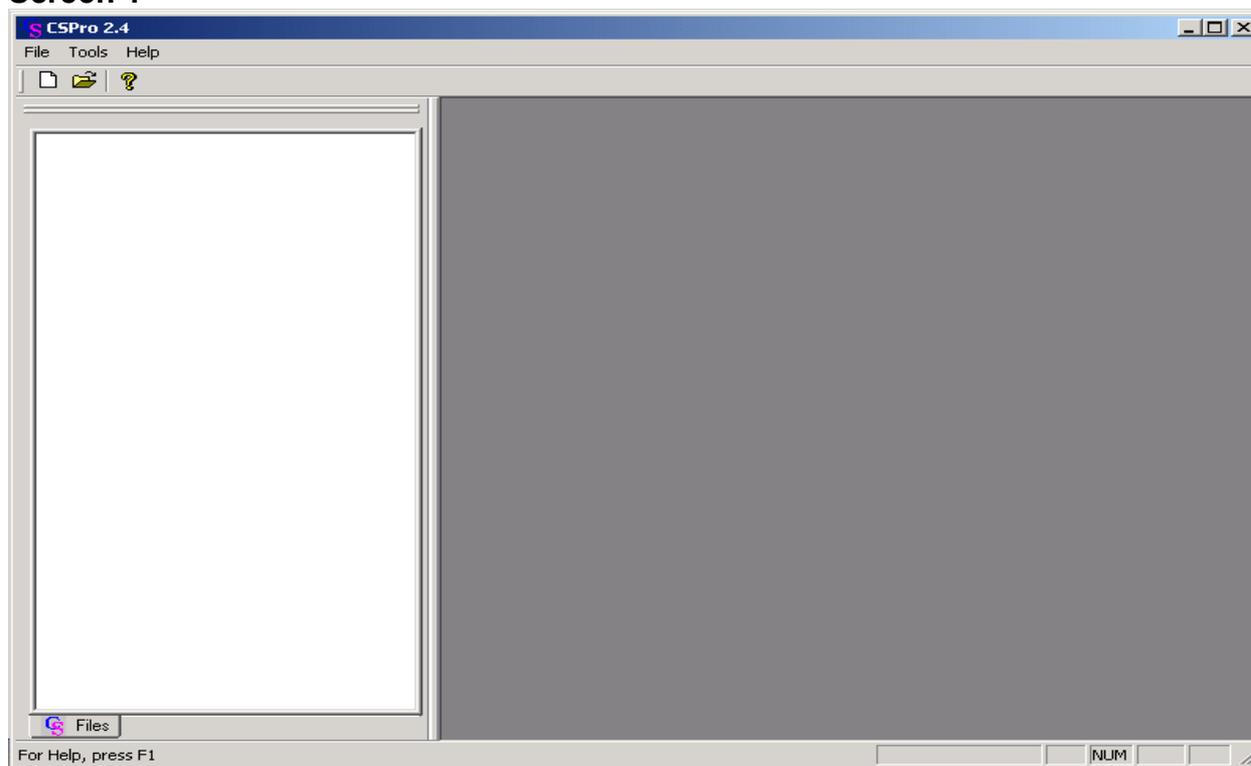
Alternatively, the CSPro2.4 icon would be added to your Windows Desktop. The user can Double click on the CSPro2.4 icon on the desktop to get into the CSPro application.

**Note: CSPro is available in public domain at no cost and may be freely distributed. It is available for free download at <http://www.census.gov/ipc/www/cspro>.**

## A CPro Cross Tabulation Example

On the desktop, double click on the CPro2.4 icon. [You may also invoke CPro from the Start menu. Click on Start, then Programs, then CPro2.4, and then CPro2.4 again.]. The following screen should appear:

### Screen 1



This is the default screen for CPro.

### **How to develop a new table:**

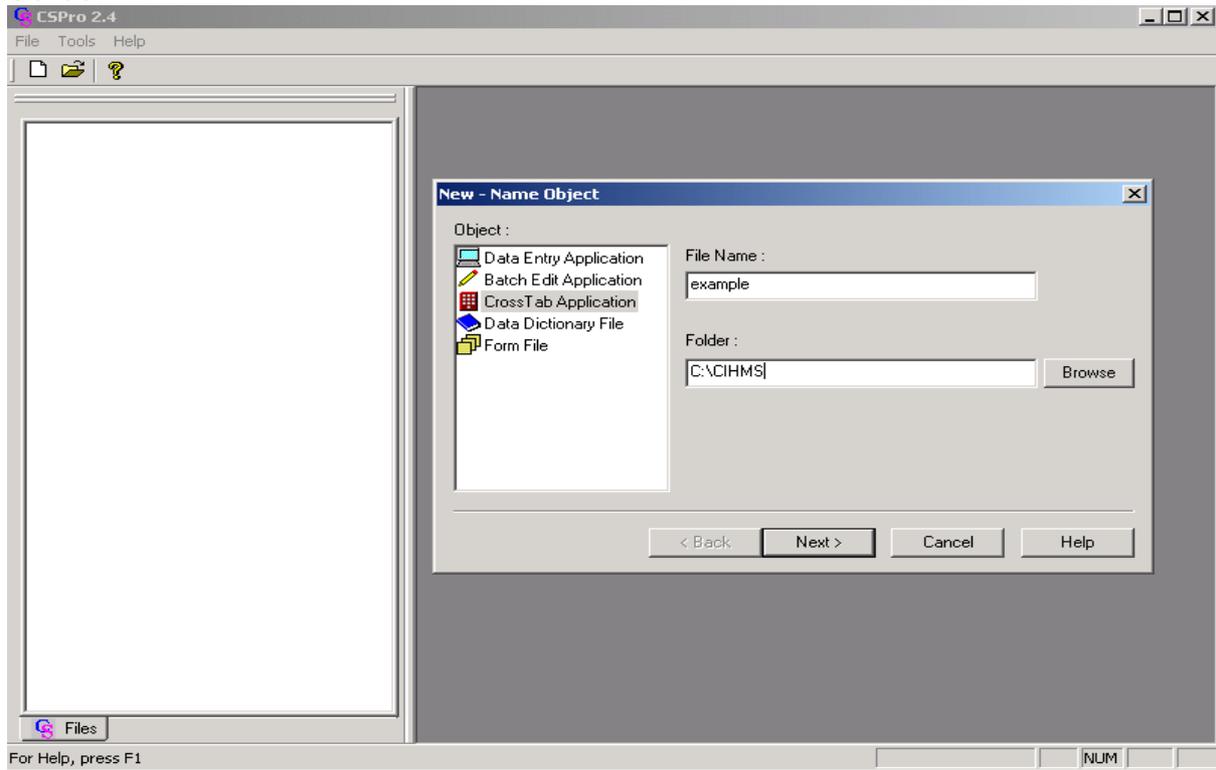
Open CPro.

Click on File → New.

Then click on Cross Tab Application, and give a file name for this application (e.g., File Name: 'example').

Then specify the folder where the output table would be residing (see Screen 2).

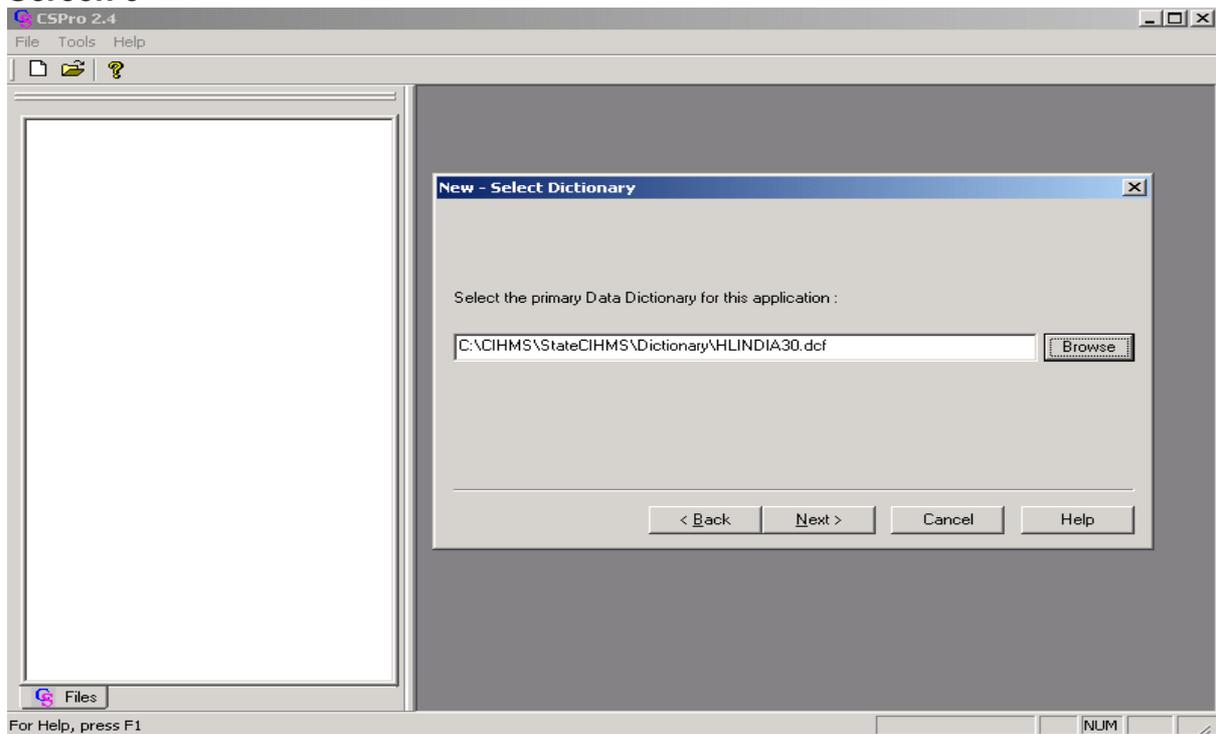
## Screen 2



Click on Next to get the Screen 3.

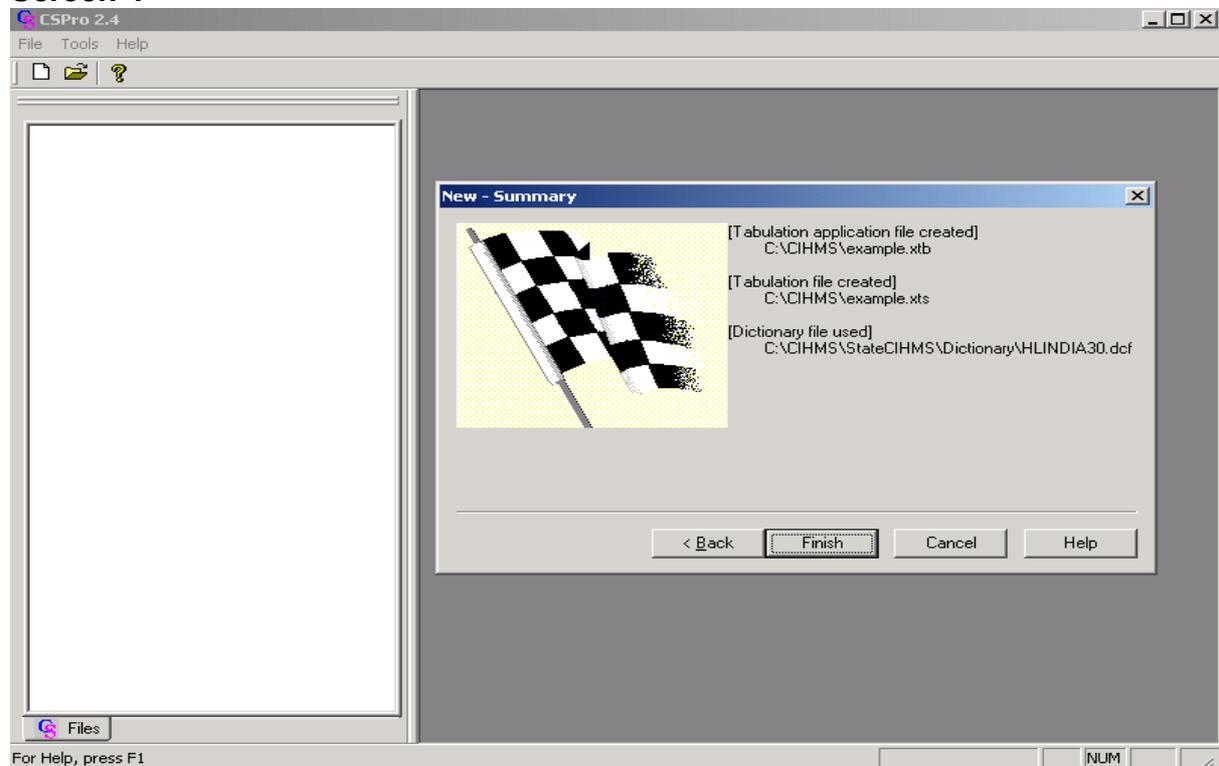
Select the dictionary "HLINDIA30.dcf" for Goa, which is placed in C:\CIHMS\StateCIHMS\Dictionary.

## Screen 3



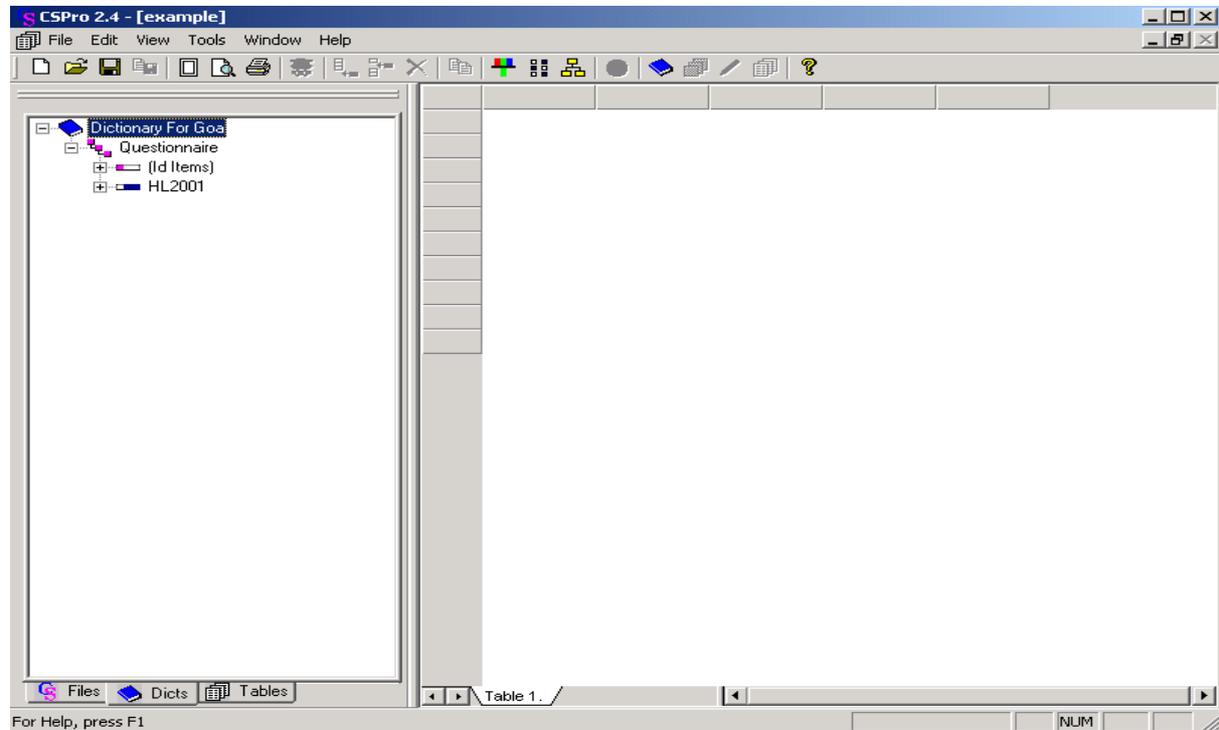
Click on “Next” to get the following screen:

#### Screen 4



Then click on “Finish”. One should have the following screen (Screen 5):

#### Screen 5



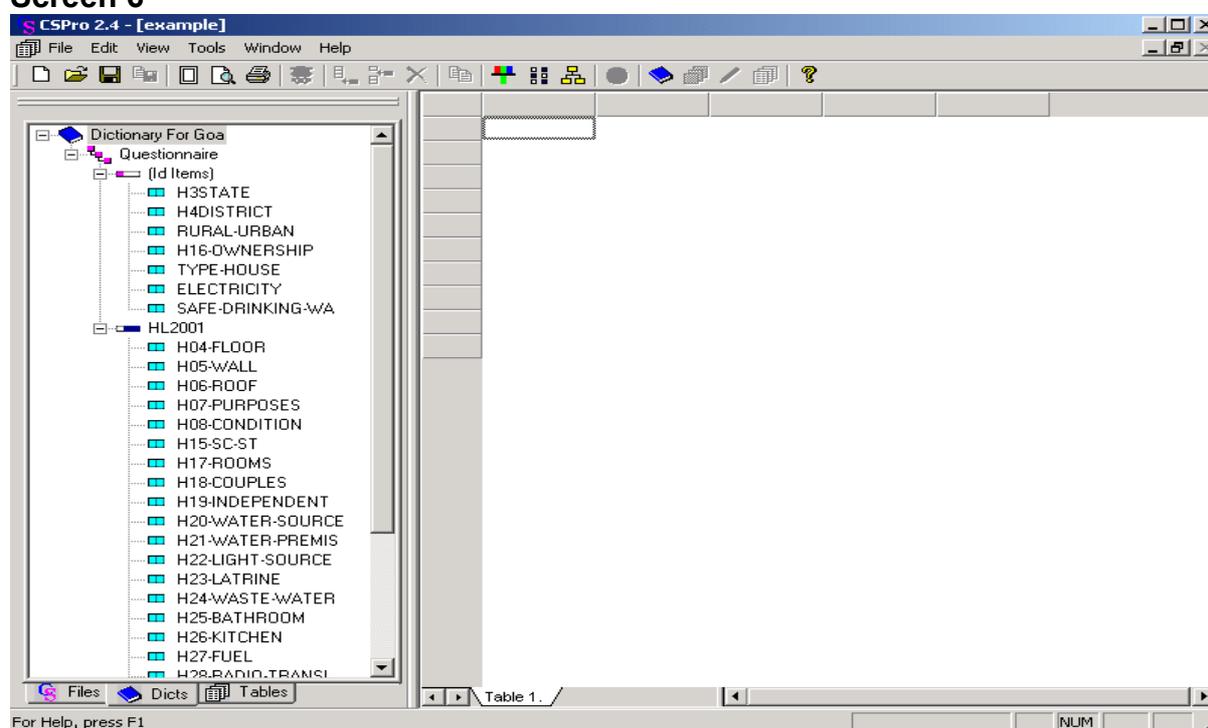
Now, the CSPro can be used for Cross Tab.

## Create A Cross Tab

Generally, for CPro applications, you will see a 'tree' in a left window frame and some other object in the right window frame. The tree has 'tabs' at the bottom for 'Files', 'Dicts', and 'Tables' [in case of a Cross Tabulation application]. Other types of applications have other tabs available. [See CPro Help for more information].

Now click the '+' next to Id items and also on HLRECORD on the dictionary tree. This should show the items available from the Household record (see Screen 6).

### Screen 6



In order to create a new table or to do the crosstab using this software, the user has to decide the variable on which he wants to do the cross tabulation.

An easy way to create a new table is to RIGHT click the mouse while the cursor is in the body of a table. Three options are available: Add [new table after all other tables], Insert [insert table BEFORE current table], and Delete [remove current table]. Select "Add Table" which produces an empty right window frame for our new tabulation.

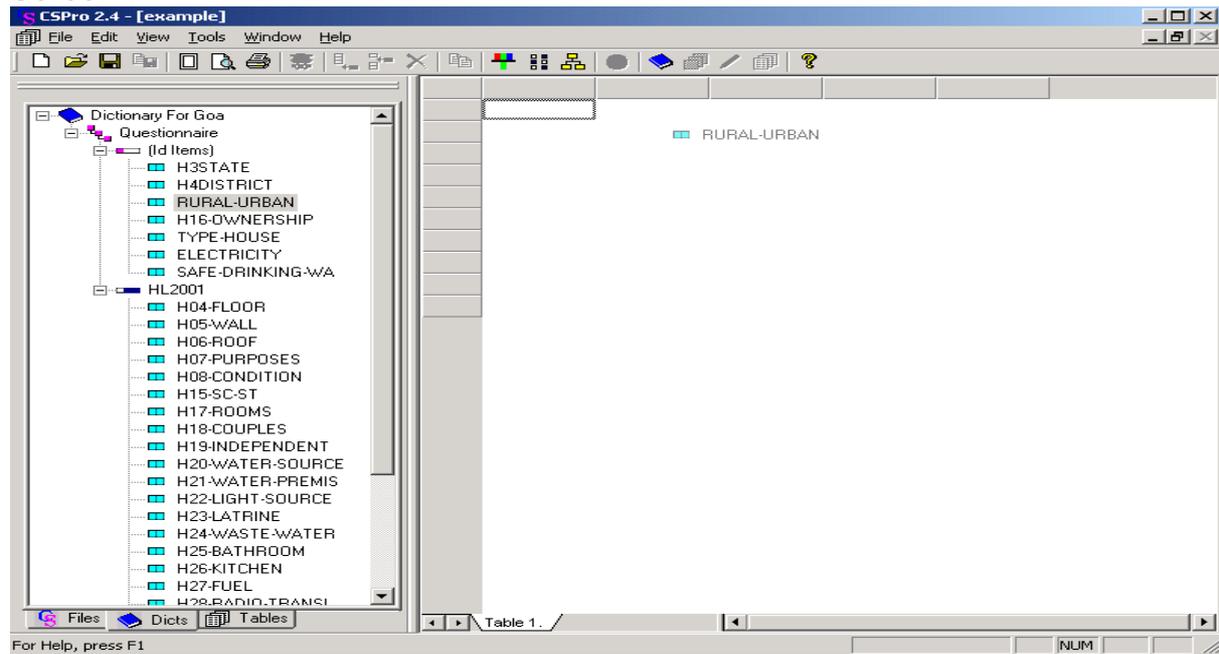
Data items are moved to the table by 'Drag & Drop' from the Data Dictionary. (Drag and Drop: Click on data item in dictionary tree hold the left mouse button down while you move the cursor over to the area of the table then release the mouse button.) The drop point determines whether the item becomes values in a row or column. Imagine a diagonal line from the top left to the bottom right of the table. An

item dropped on the left/under that line becomes a row item. An item dropped on the right/above that line becomes a column item.

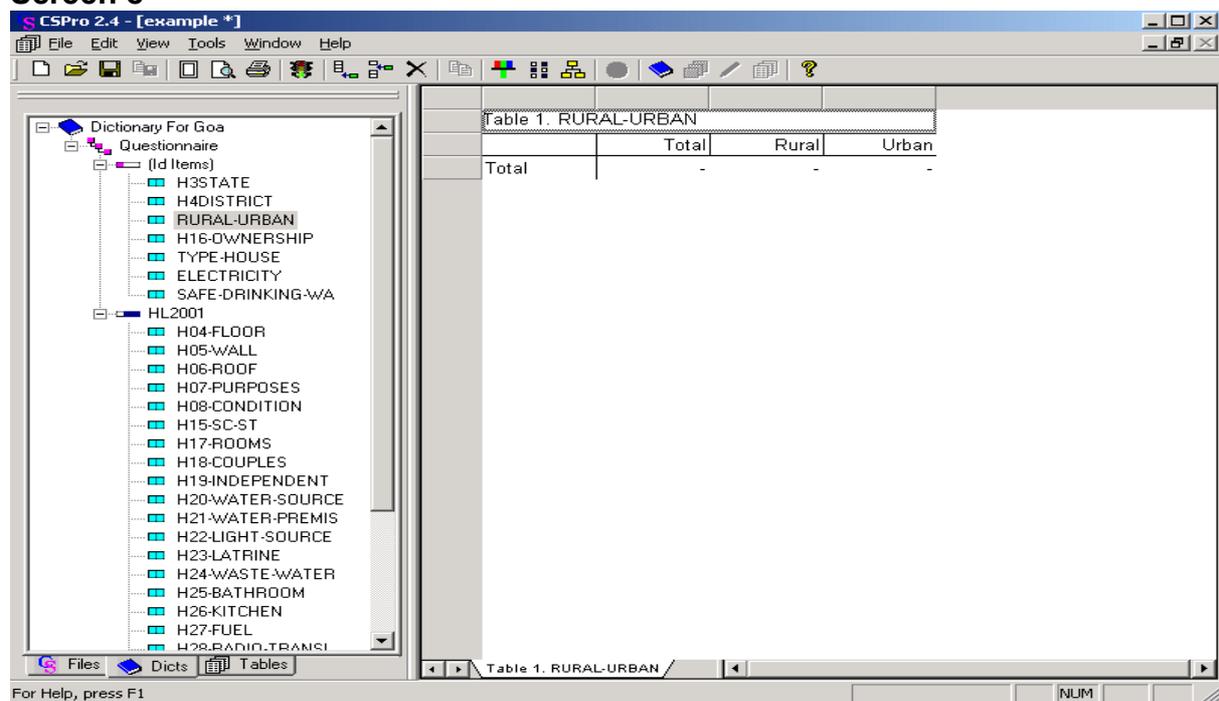
**For example, the user wants to cross tabulate urban/rural by materials of wall:**

Drag and drop the variable **RURAL\_URBAN** from the variable list on the top of the empty screen for column. The category will appear on the screen (see Screen 7 and Screen 8).

### Screen 7



### Screen 8



Next choose the variable for rows, i.e., H05\_WALL, drag and drop it on the left side of the table on the screen. The categories of the row variable should appear on the screen (see Screen 9 and Screen 10).

### Screen 9

For Help, press F1

### Screen 10

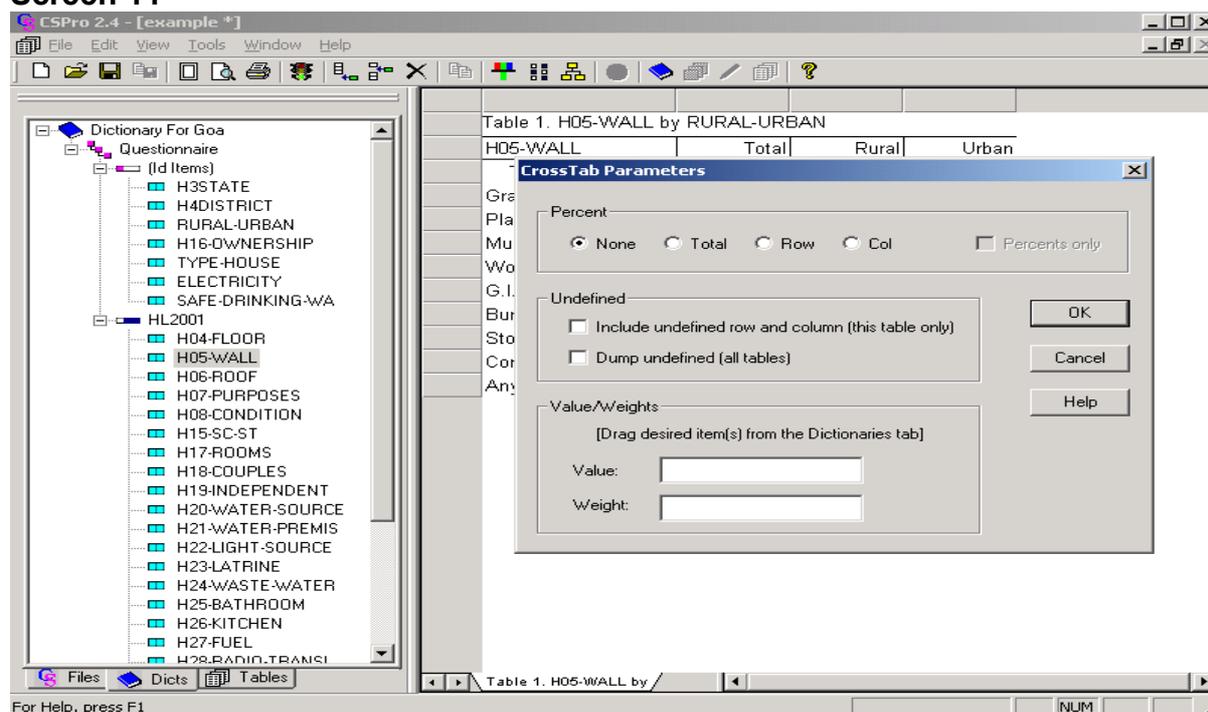
For Help, press F1

Run the tabulation now using “Appropriate State Data File” by making sure that the items are already weighted.

## How to weight the data using the CPro Software

In CPro, to use a 'weight/expansion factor' click on the 'Parameters' button, which is black and white checked icon below the menu and to the right of the 'Universe' button. Another screen/parameters dialog box-asking OK for weight would appear:

### Screen 11



This screen allows users to

- add various percents to tables
- add a row and column for undefined data [values in data that are not accounted for in a value set]
- select of a Value and/or Weight to be tallied [the value of the item (or product of items if both selected) is tallied instead of unit (=1) tally]

The CIHMS data should be weighted and since we are tabulating numbers of households, we select use 'WEIGHT' [the household weight] as THE weight. Select 'WEIGHT' from this list. Now drag and drop it into the Weight dialog box under 'Item' as shown in the following screen:

## Screen 12

Table 1. H05-WALL by RURAL-URBAN

H05-WALL	Total	Rural	Urban
Grass/Thatch/Bam	-	-	-
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	-	-	-
Wood	-	-	-
G.I./Metal/Asbes	-	-	-
Burnt Brick	-	-	-
Stone	-	-	-
Concrete	-	-	-
Any Other	-	-	-

**CrossTab Parameters**

Percent:  None  Total  Row  Col  Percents only

Undefined:  Include undefined row and column (this table only)  Dump undefined (all tables)

Value/Weights: [Drag desired item(s) from the Dictionaries tab]  
 Value:   
 Weight:

Also make sure that 'None' is selected from the 'Percent' section and that nothing is checked in the 'Undefined' section. When your dialog box corresponds to this, click 'OK' to get the following Screen 13:

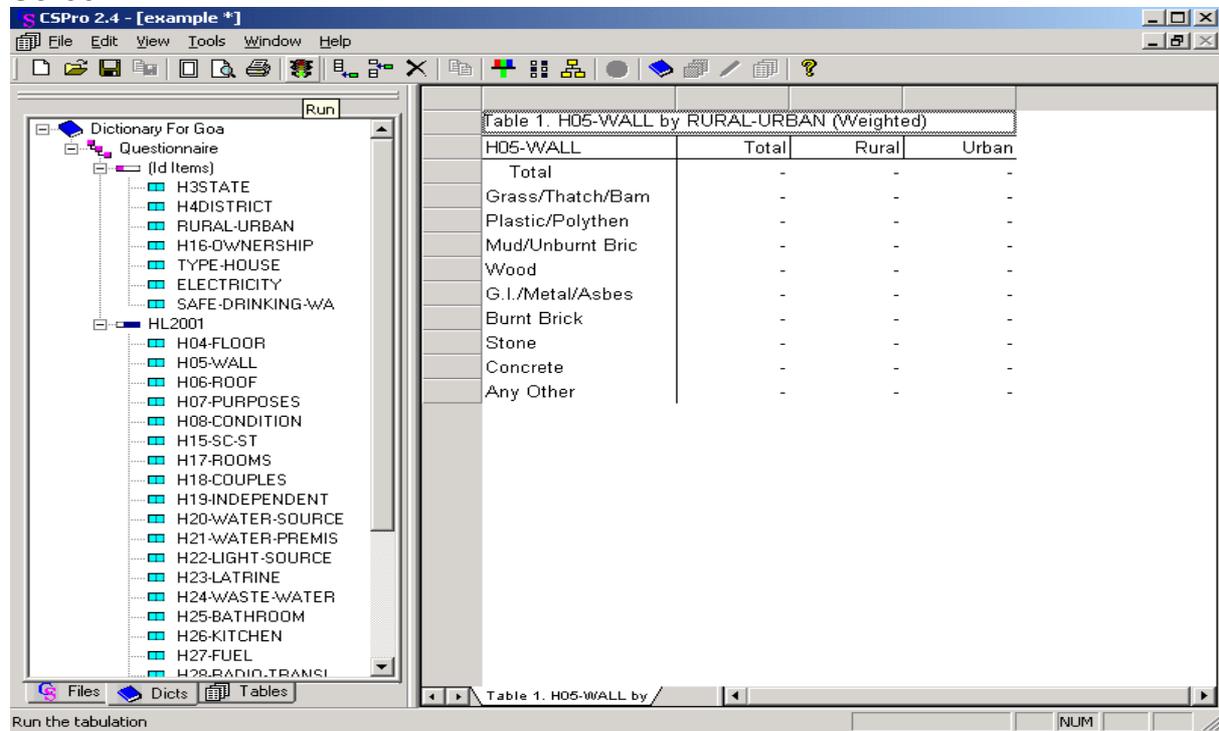
## Screen 13

Table 1. H05-WALL by RURAL-URBAN (Weighted)

H05-WALL	Total	Rural	Urban
Total	-	-	-
Grass/Thatch/Bam	-	-	-
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	-	-	-
Wood	-	-	-
G.I./Metal/Asbes	-	-	-
Burnt Brick	-	-	-
Stone	-	-	-
Concrete	-	-	-
Any Other	-	-	-

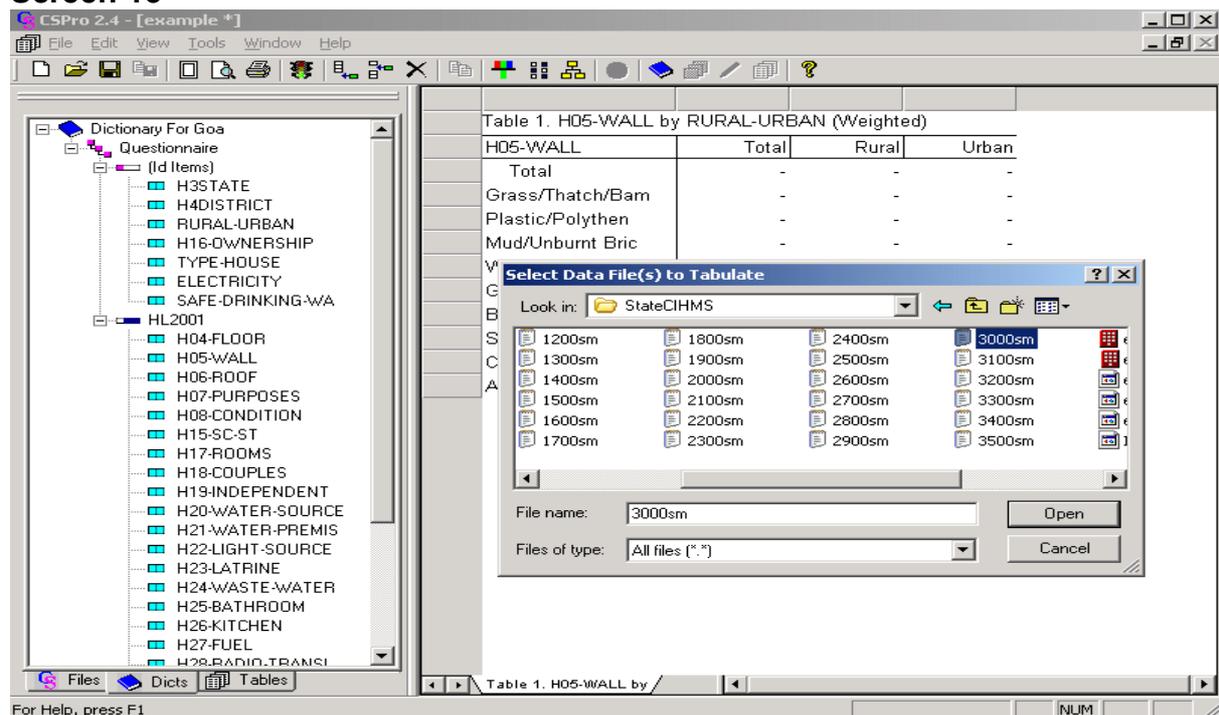
Now tabulate (run) the data. To tabulate (run) the data, press the Run (traffic light) button on the tool bar (refer to the Screen 14).

### Screen 14



After pressing the 'Run' button, the following screen (Screen 15) would appear:

### Screen 15



Again we need to select the 'StateCIHMS' folder (if not appear in the 'Look in' dialog box) and then the '3000sm.txt' data file.

**Note: CPro does NOT require any specific file extension for an ASCII data file but this file a 'TXT' extension. [The Full CIHMS data file may have a different extension.]**

Click Open to begin the tabulation. A progress indicator will appear during the tabulation [unless your computer is extremely fast]. When the tabulation is completed, the Table Viewer will display the table in the right Window frame as shown in Screen 16.

### Screen 16

The screenshot shows the CPro 2.4 interface. On the left, a tree view under 'Dictionary For Goa' lists various variables, with 'H05-WALL' selected. On the right, a table titled 'Table 1. H05-WALL by RURAL-URBAN (Weighted)' displays the following data:

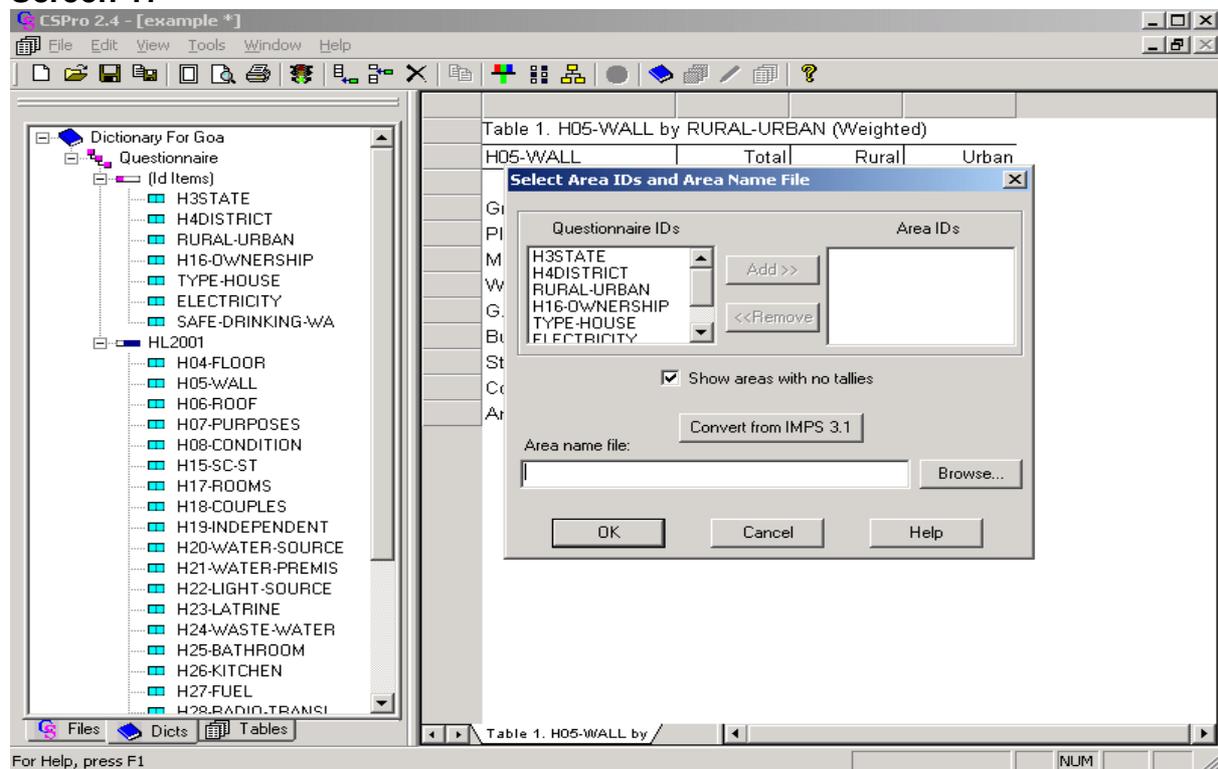
H05-WALL	Total	Rural	Urban
Total	279,240	140,760	138,480
Grass/Thatch/Bam	7,240	4,360	2,860
Plastic/Polythen	940	380	560
Mud/Unburnt Bric	73,020	49,480	23,540
Wood	2,280	760	1,520
G.I./Metal/Asbes	2,380	660	1,720
Burnt Brick	10,420	2,580	7,840
Stone	168,000	77,660	90,340
Concrete	14,480	4,660	9,820
Any Other	480	200	280

### Use of Area Files

Suppose the user is interested in getting the desired results for the districts mentioned in the area files. In this case, one has to do the following exercise:

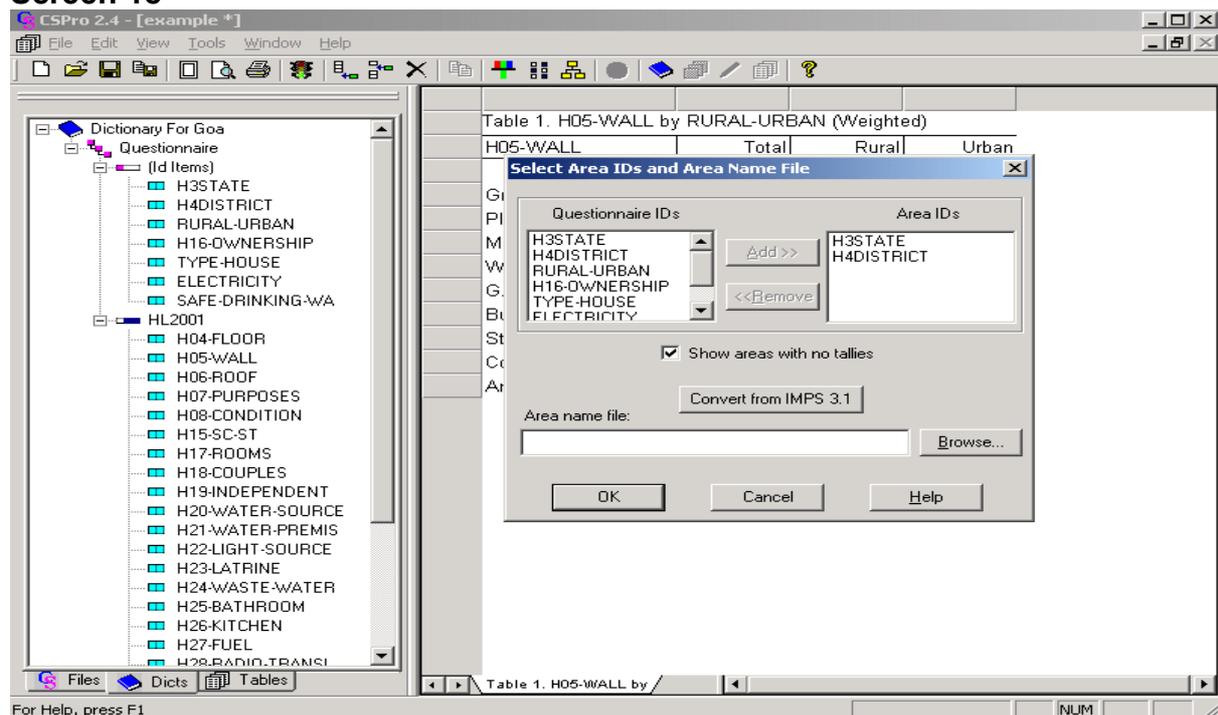
To select the area IDs and area name files, click on the yellow icon with three squares on the right of the parameter icon below the menu bar, to open the area dialog box as shown below:

## Screen 17



Select the variables shown in the Questionnaire ID, which are to be added in the Area ID. For example, select H3STATE and H4DISTRICT from the Questionnaire ID and add it to the Area ID (see Screen 18).

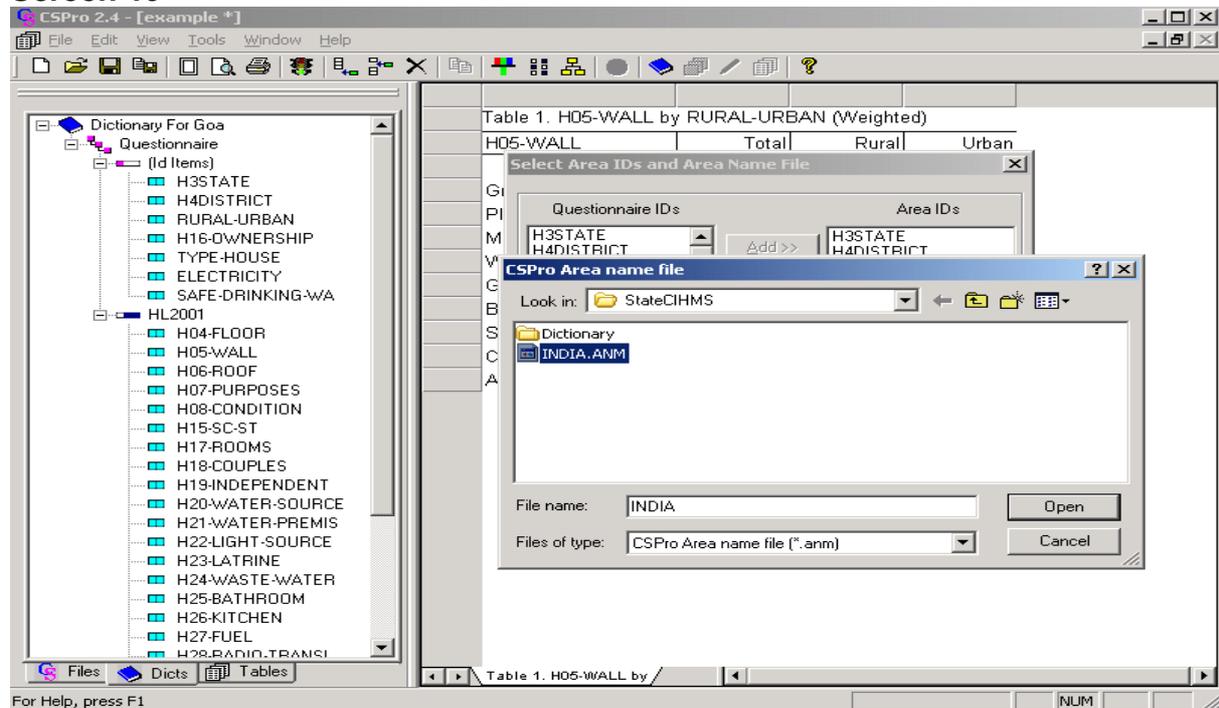
## Screen 18



Click on Browse to select the area Files.

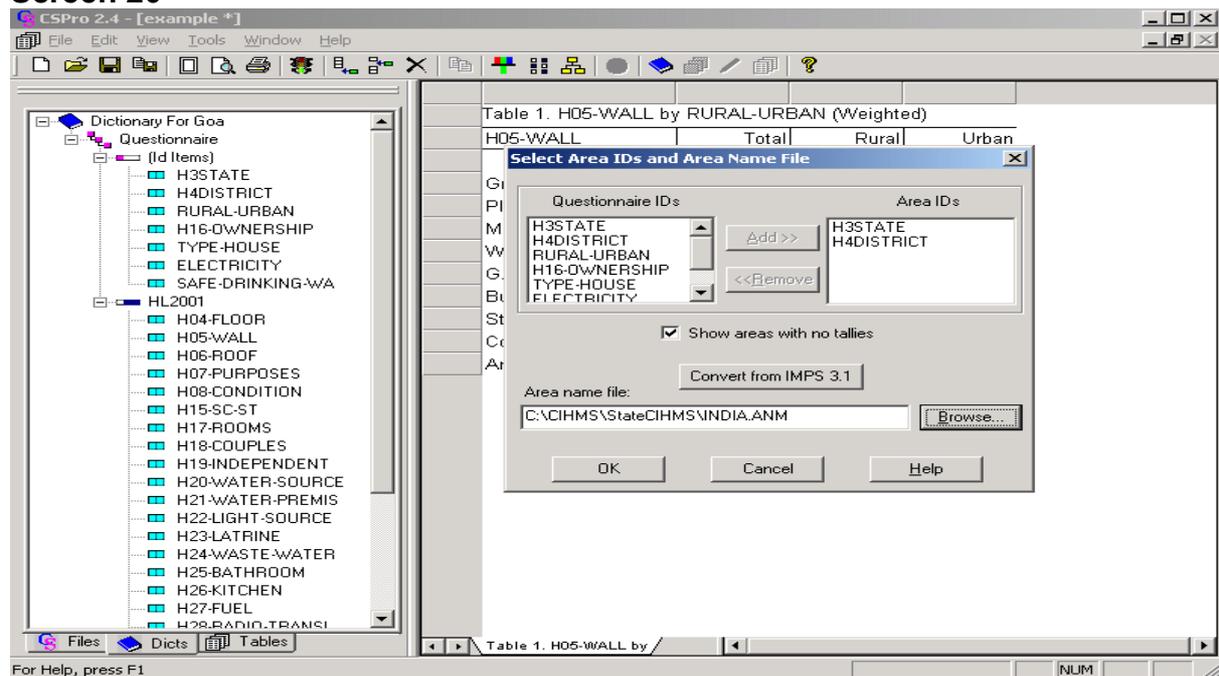
For example, select area File “INDIA.ANM” from the folder C:\CIHMS\StateCIHMS as shown below:

### Screen 19



Click on 'Open' to get the Screen 20.

### Screen 20



Further, Click on 'OK' to get the Screen 21 as shown below:

### Screen 21

Table 1. H05-WALL by RURAL-URBAN (Weighted)

H05-WALL	Total	Rural	Urban
\$AreaName\$			
Total	-	-	-
Grass/Thatch/Bam	-	-	-
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	-	-	-
Wood	-	-	-
G.I./Metal/Asbes	-	-	-
Burnt Brick	-	-	-
Stone	-	-	-
Concrete	-	-	-
Any Other	-	-	-

Run the data as described in earlier sections to get the desired results. The following three screens may help the user to do this exercise.

### Screen 22

Table 1. H05-WALL by RURAL-URBAN (Weighted)

H05-WALL	Total	Rural	Urban
\$AreaName\$			
Total	-	-	-

Select Data File(s) to Tabulate

Look in: StateCIHMS

Dictionary	0600sm	1200sm	1800sm
0100sm	0700sm	1300sm	1900sm
0200sm	0800sm	1400sm	2000sm
0300sm	0900sm	1500sm	2100sm
0400sm	1000sm	1600sm	2200sm
0500sm	1100sm	1700sm	2300sm

File name: 0300sm

Files of type: All files (\*.\*)

Type: Text Document  
Date Modified: 20/08/2004 6:22 PM  
Size: 1.38 MB

## Screen 23

The screenshot shows the CSPro 2.4 interface. On the left is a tree view of the 'Dictionary For Goa' containing various questionnaire items. The main window displays a table titled 'Table 1. H05-WALL by RURAL-URBAN (Weighted)'. A 'Select Data File(s) to Tabulate' dialog box is open, showing a file list in the 'StateCIHMS' directory. The file '3000sm' is selected. The dialog also shows the file name field and the file type set to 'All files (\*.\*)'.

H05-WALL	Total	Rural	Urban
\$AreaName\$			
Total	-	-	-

## Screen 24

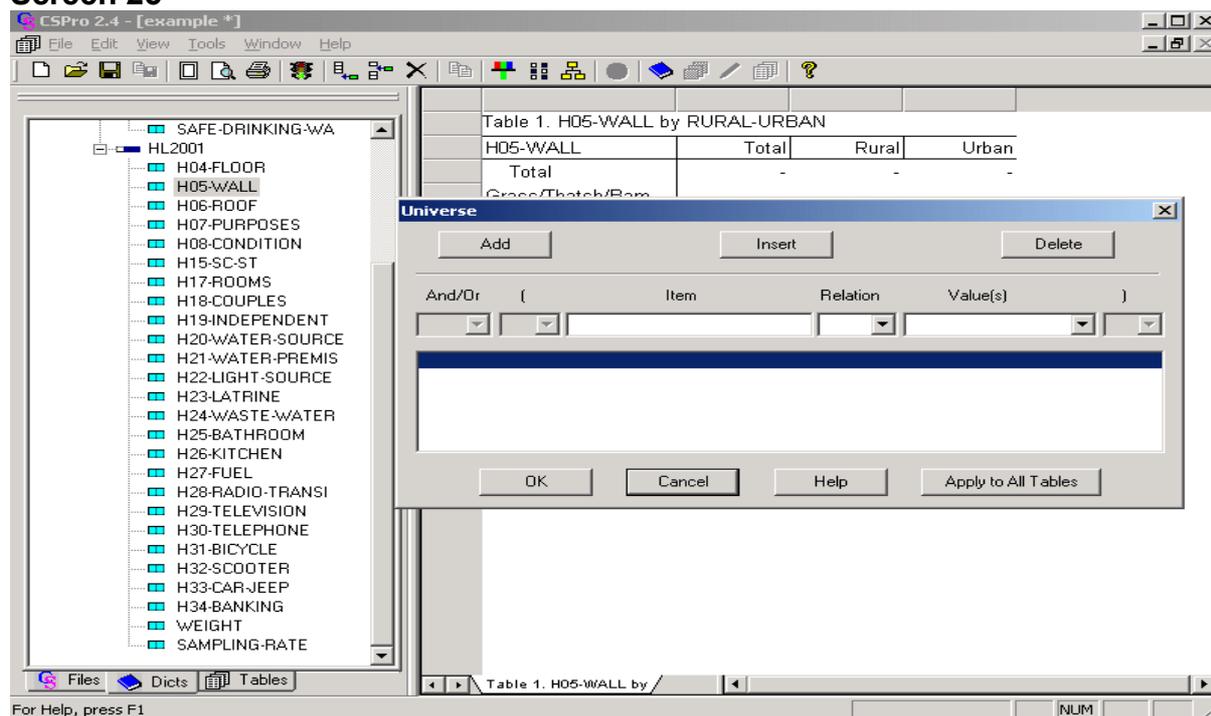
The screenshot shows the CSPro 2.4 interface with the same tree view on the left. The main window displays a completed table titled 'Table 1. H05-WALL by RURAL-URBAN (Weighted)'. The table shows data for 'All States for this data' and 'State - GOA 30', broken down by wall material type and rural/urban status.

H05-WALL	Total	Rural	Urban
All States for this data			
Total	279,240	140,760	138,480
Grass/Thatch/Bam	7,240	4,380	2,860
Plastic/Polythen	940	380	560
Mud/Unburnt Bric	73,020	49,480	23,540
Wood	2,280	760	1,520
G.I./Metal/Asbes	2,380	660	1,720
Burnt Brick	10,420	2,580	7,840
Stone	168,000	77,660	90,340
Concrete	14,480	4,660	9,820
Any Other	480	200	280
State - GOA 30			
Total	279,240	140,760	138,480
Grass/Thatch/Bam	7,240	4,380	2,860
Plastic/Polythen	940	380	560
Mud/Unburnt Bric	73,020	49,480	23,540
Wood	2,280	760	1,520
G.I./Metal/Asbes	2,380	660	1,720
Burnt Brick	10,420	2,580	7,840
Stone	168,000	77,660	90,340
Concrete	14,480	4,660	9,820
Any Other	480	200	280

## How to select the Universe

The Universe button is the red/green/blue one just above the upper left corner of the table. To create a universe: Click this button to open the universe dialog box as shown in Screen 25.

### Screen 25



Suppose the user is interested in doing tabulations only for one district in a state, they can define the district in the universe dialog box in the following way:

Select 'H4DISTRICT (representing Districts in a state)' from this list. Now drag and drop it into the universe dialog box under 'Item'.

A drop down menu of relationships will appear in 'Relation'. Select '=' from this group as shown in Screen 26.

Then a drop down menu of values will appear in 'Value(s)'. Select 'Particular District Code' from the list of values to complete the questionnaire/record selection. For example, South Goa as shown in the example below in Screen 27.

## Screen 26

Table 1. H05-WALL by RURAL-URBAN

H05-WALL	Total	Rural	Urban
Total	-	-	-
Gross/Thatch/Bam	-	-	-

Universe

And/Or ( Item Relation Value(s) )

H4DISTRICT =

H4DISTRICT =

OK Cancel Help Apply to All Tables

For Help, press F1

## Screen 27

Table 1. H05-WALL by RURAL-URBAN

H05-WALL	Total	Rural	Urban
Total	-	-	-
Gross/Thatch/Bam	-	-	-

Universe

And/Or ( Item Relation Value(s) )

H4DISTRICT = South Goa

H4DISTRICT = South Goa

OK Cancel Help Apply to All Tables

For Help, press F1

Click on 'OK' to the following screen:

## Screen 28

The screenshot shows the CSPro 2.4 interface. On the left is a 'Dictionary For Goa' with a tree view of questionnaire items. On the right is a table titled 'Table 1. H05-WALL by RURAL-URBAN for H4DISTRICT = South Goa'. The table has columns for 'H05-WALL', 'Total', 'Rural', and 'Urban'. The data rows are as follows:

H05-WALL	Total	Rural	Urban
Total	-	-	-
Grass/Thatch/Bam	-	-	-
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	-	-	-
Wood	-	-	-
G.I./Metal/Asbes	-	-	-
Burnt Brick	-	-	-
Stone	-	-	-
Concrete	-	-	-
Any Other	-	-	-

Make sure that the CIHMS data is weighted as explained in the section. “How to weight the data using CSPro Software” to get the following screen:

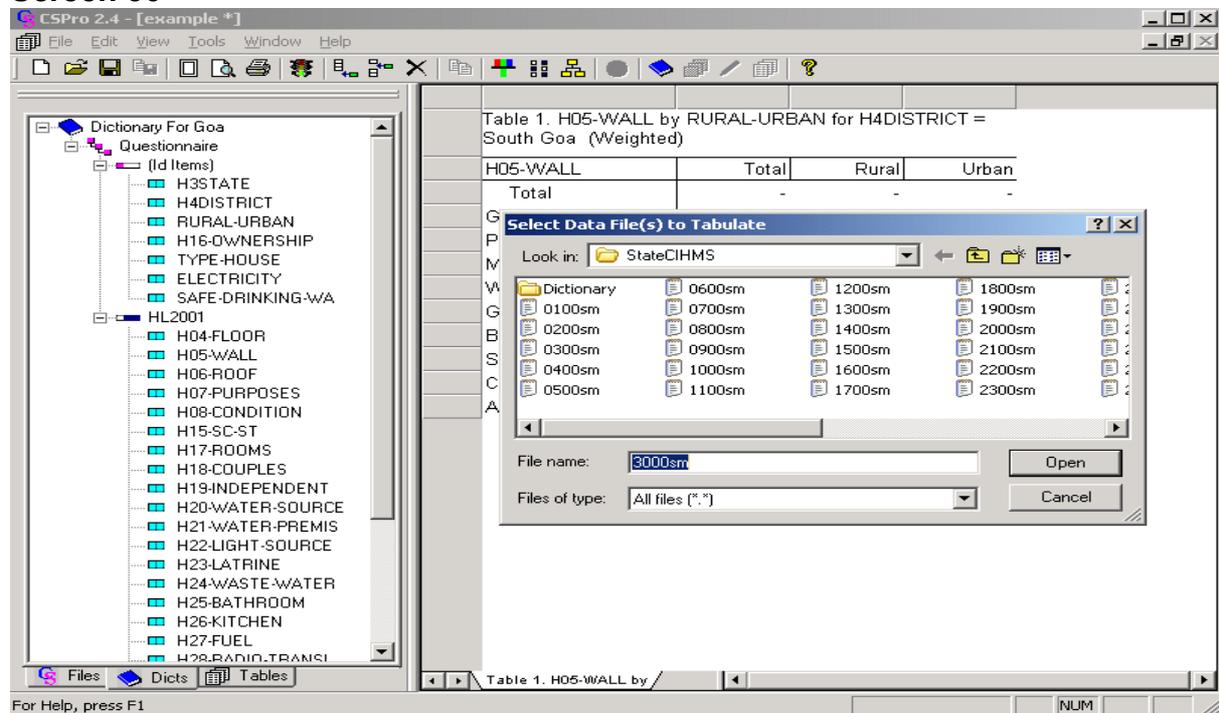
## Screen 29

The screenshot shows the CSPro 2.4 interface. On the left is a 'Dictionary For Goa' with a tree view of questionnaire items. On the right is a table titled 'Table 1. H05-WALL by RURAL-URBAN for H4DISTRICT = South Goa (Weighted)'. The table has columns for 'H05-WALL', 'Total', 'Rural', and 'Urban'. The data rows are as follows:

H05-WALL	Total	Rural	Urban
Total	-	-	-
Grass/Thatch/Bam	-	-	-
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	-	-	-
Wood	-	-	-
G.I./Metal/Asbes	-	-	-
Burnt Brick	-	-	-
Stone	-	-	-
Concrete	-	-	-
Any Other	-	-	-

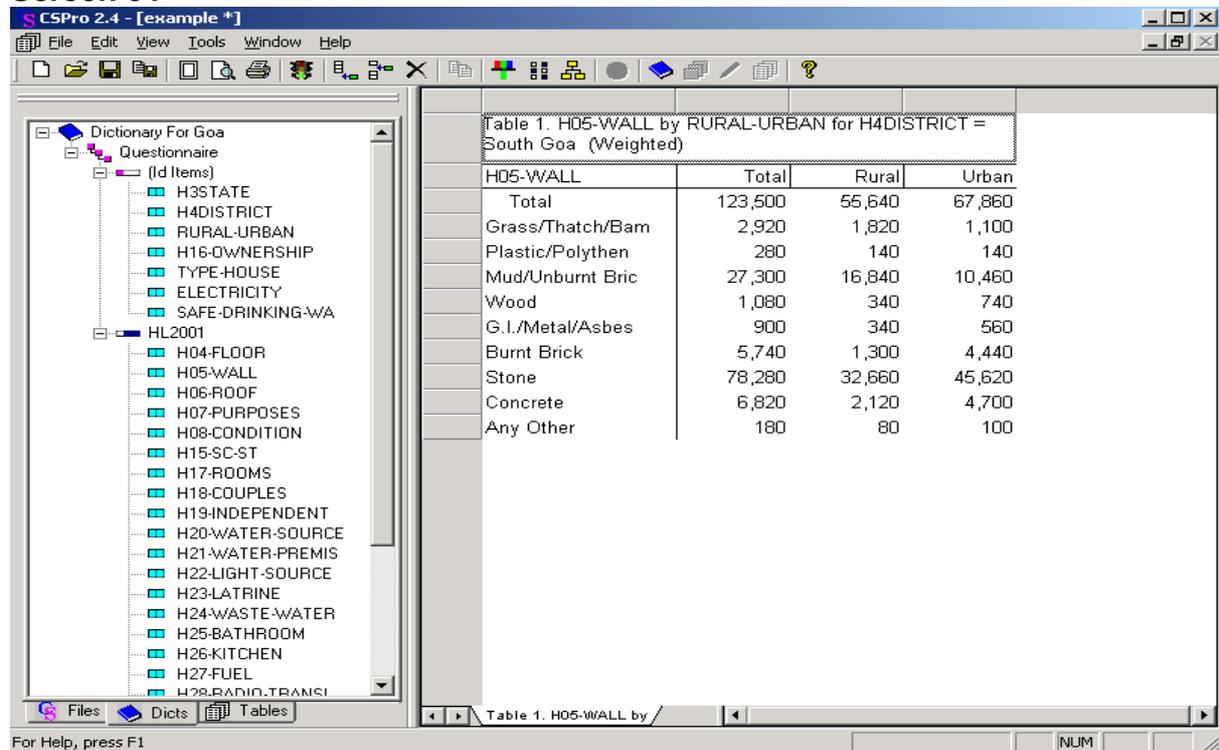
Run the data as explained earlier to get the desired result. The help may be taken from Screen 30 and Screen 31.

### Screen 30



Click on 'Open' to get the following screen:

### Screen 31



Suppose the user further wants to tabulate the rural/urban by materials of wall by taking the universe as “SC” in South Goa district of Goa. In order to do such tabulation, the user has to do the following exercise:

Click on the Universe button, the red/green/blue one just above the upper left corner of the table, to open the universe dialog box. Select “H4DISTRICT” (representing Districts in a state) from this list and drag and drop it into the universe dialog box under ‘Item’. Select ‘=’ from drop down menu of relationships in ‘Relation’. Then select ‘Particular District Code’ from the list of values to complete the questionnaire/record selection, for example, South Goa (see Screen 32).

### Screen 32

The screenshot shows the CSPro 2.4 interface. On the left is a tree view of the 'Dictionary For Goa' containing various questionnaire items. In the center, a table displays data for 'H05-WALL' categorized by 'Rural' and 'Urban' for the 'H4DISTRICT = South Goa'. A 'Universe' dialog box is open, showing the configuration for the current table's universe.

H05-WALL	Total	Rural	Urban
Total	123,500	55,640	67,860

The 'Universe' dialog box contains the following configuration:

- Buttons: Add, Insert, Delete
- And/Or: ( )
- Item: H4DISTRICT
- Relation: =
- Value(s): South Goa
- Current Universe: H4DISTRICT = South Goa
- Buttons: OK, Cancel, Help, Apply to All Tables

Now, first select “Add” and then select “And” from “And/Or” as shown in Screen 33.

### Screen 33

Table 1. H05-WALL by RURAL-URBAN for H4DISTRICT = South Goa (Weighted)

H05-WALL	Total	Rural	Urban
Total	123 600	55 640	67 860

Further, select H15\_SC\_ST (representing the SC/ST variable) from the HLRECORD list and drag and drop it into the Universe dialog box under “Item”. Select ‘=’ from drop down menu of relationships in ‘Relation’. Then select ‘SC’ code from the list of values to complete the questionnaire/record selection. Now, one should have the following Screen 34.

### Screen 34

Table 1. H05-WALL by RURAL-URBAN for H4DISTRICT = South Goa (Weighted)

H05-WALL	Total	Rural	Urban
Total	123 600	55 640	67 860

Click on 'OK' and run the data as explained earlier to get the desired result as shown below in Screen 35:

### Screen 35

The screenshot shows the CSPro 2.4 interface with a tree view on the left and a data table on the right. The tree view includes a 'Questionnaire' section with various items, and a 'Tables' section at the bottom. The data table is titled 'Table 1. H05-WALL by RURAL-URBAN for H4DISTRICT = South Goa And H15-SC-ST = SC (Weighted)'. The table has four columns: H05-WALL, Total, Rural, and Urban. The data is as follows:

H05-WALL	Total	Rural	Urban
Total	3,680	1,320	2,360
Grass/Thatch/Bam	140	40	100
Plastic/Polythen	-	-	-
Mud/Unburnt Bric	940	580	360
Wood	60	-	60
G.I./Metal/Asbes	40	-	40
Burnt Brick	140	20	120
Stone	2,220	680	1,540
Concrete	120	-	120
Any Other	20	-	20